In re Patent Application of:
MEARS
Serial No. **NOT YET ASSIGNED**
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IN THE CLAIMS:

Please cancel Claims 1 to 76.

Please add new Claims 77 to 104.

77. (New) A method for making a semiconductor device comprising:

forming a superlattice comprising a plurality of stacked groups of layers; and

each group of layers of the superlattice comprising four stacked base semiconductor monolayers defining a base semiconductor portion and an energy band-modifying layer thereon;

the energy-band modifying layer comprising at least one non-semiconductor monolayer constrained within a crystal lattice of adjacent base semiconductor portions.

78. (New) A method according to Claim 77 wherein the superlattice also has a common energy band structure therein.

79. (New) A method according to Claim 77 wherein the superlattice has a higher charge carrier mobility in at least one direction than would otherwise be present.

80. (New) A method according to Claim 79 wherein the higher charge carrier mobility results from a lower conductivity effective mass for the charge carriers in a

parallel direction than would otherwise be present.

81. (New) A method according to Claim 80 wherein the lower conductivity effective mass is less than two-thirds the conductivity effective mass that would otherwise occur.

82. (New) A method according to Claim 79 wherein the charge carriers having the higher mobility comprise at least one of electrons and holes.

83. (New) A method according to Claim 77 wherein each base semiconductor portion comprises silicon.

84. (New) A method according to Claim 77 wherein each energy band-modifying layer comprises oxygen.

85. (New) A method according to Claim 77 wherein each energy band-modifying layer is a single monolayer thick.

86. (New) A method according to Claim 77 wherein the superlattice further has a substantially direct energy bandgap.

87. (New) A method according to Claim 77 wherein the superlattice further comprises a base semiconductor cap layer on an uppermost group of layers.

88. (New) A method according to Claim 77 wherein each non-semiconductor monolayer is thermally stable through

deposition of a next layer.

89. (New) A method according to Claim 77 wherein each base semiconductor portion comprises a base semiconductor selected from the group consisting of Group IV semiconductors, Group III-V semiconductors, and Group II-VI semiconductors.

90. (New) A method according to Claim 77 wherein each energy band-modifying layer comprises a non-semiconductor selected from the group consisting of oxygen, nitrogen, fluorine, and carbon-oxygen.

91. (New) A method according to Claim 77 wherein forming the superlattice comprises forming the superlattice on a substrate.

92. (New) A method according to Claim 77 further comprising doping the superlattice with at least one type of conductivity dopant therein.

93. (New) A method according to Claim 77 wherein the superlattice defines a channel for a transistor.

94. (New) A method for making a semiconductor device comprising:

forming a superlattice comprising a plurality of stacked groups of layers; and

each group of layers of the superlattice comprising four stacked silicon atomic layers defining a silicon portion and an energy band-modifying layer thereon;

the energy-band modifying layer comprising at least one oxygen atomic layer constrained within a crystal lattice of adjacent silicon portions.

95. (New) A method according to Claim 94 wherein the superlattice has a common energy band structure therein.

96. (New) A method according to Claim 94 wherein the superlattice has a higher charge carrier mobility in at least one direction than would otherwise be present.

97. (New) A method according to Claim 96 wherein the higher charge carrier mobility results from a lower conductivity effective mass for the charge carriers in a parallel direction than would otherwise be present.

98. (New) A method according to Claim 96 wherein the charge carriers having the higher mobility comprise at least one of electrons and holes.

99. (New) A method according to Claim 94 wherein each energy band-modifying layer is a single atomic layer thick.

100. (New) A method according to Claim 94 wherein the superlattice further has a substantially direct energy

bandgap.

101. (New) A method according to Claim 94 wherein the superlattice further comprises a silicon cap layer on an uppermost group of layers.

102. (New) A method according to Claim 94 wherein forming the superlattice comprises forming the superlattice on a substrate.

103. (New) A method according to Claim 94 further comprising doping the superlattice with at least one type of conductivity dopant therein.

104. (New) A method according to Claim 94 wherein the superlattice defines a channel for a transistor.